

Appl. No. 10/605,416
Amdt. dated February 26, 2006
Reply to Office action of November 30, 2005

REMARKS/ARGUMENTS

1. Objections of claims 29 and 39:

Claims 29 and 39 are objected to because of the following informalities: claims 29 & 5 39 currently read as, "... the thin film transistors is formed ..." It appears it should have read as, "... the thin film transistors are formed ..." Appropriate correction is required.

Response:

10 Applicant appreciates the comment of Examiner. Claims 29 and 39 have been appropriately amended, as shown in the Listing of Claims section. Acceptance of the amended claims 29 and 39 is politely requested.

2. Rejection of claim 30 over 35 U.S.C. 112:

15 Claim 30 is rejected under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement, as cited on pages 2-3 of the above-identified Office Action.

Response:

Claim 30 has been canceled. Therefore, no consideration is requested anymore.

20 **3. Rejection of claims 20, 22-24, 26-28, 31-34 & 36-38 over 35 U.S.C. 102(e):**

Claims 20, 22-24, 26-28, 31-34 & 36-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Wachi U.S. Patent No. 6,819,375 for reasons of record, as cited in pages 3-5 of the above-identified Office action.

25 **Response:**

Claims 20 and 31 are amended to clearly define that each of the color filters has a plurality of *curved convex structure* on its surface. Dependent claims of claims 20 and 31 are therefore amended for the corresponding terms. *Since each color filter of this*

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application has a plurality of curved convex structure, it helps to scatter light and therefore the transmittance of the color filters is effectively increased, which results in improving the brightness of the LCD. Therefore, a diffusing layer may be replaced by the color filters with the curved convex structures of this application (par. [0011], par [0020],

5 and par [0025]).

Referring to Figs.12 and 1-3 of Wachi's application, only the color filters 23 shown in Fig.1 and Fig.3 have protrusions on their surfaces while Fig.12 does not show the color filters 17 on the upper substrate have any protrusions. However, *the protrusions on the color filters 23 have sharp surfaces*. According to the specification and abstract of Wachi's, *the main function of the protrusions of the color filters is to define a state of alignment of liquid crystals (col.1, lines 58-65), and Wachi never mentions that the protrusions of the color filters can improve the transmittance of the color filters or help scattering light*. Therefore, the protrusions of Wachi's application are quite different from the curved convex structure of this application. Furthermore, even though Fig.15 of Wachi's application discloses forming a curved surface (261c) on the color filter, one color filter 26 corresponds to only one sub-pixel 7 and has only one alignment control protrusion 261c, not a plurality of curved convex structures, wherein the alignment control protrusion 261a is still used for align liquid crystals, not for the use of scattering light. Therefore, *Wachi never discloses that each color filter of his display have a plurality of curved convex structures on its surface*, thus the LCDs of this application is quite different from the structures of Wachi's.

In addition, since the curved convex structures on each color filter of this application have smooth surfaces and small height differences, the problem of a non-uniform cell gap 19 shown in Fig.2 caused by forming holes 18 in the color filters of a prior-art structure, as described in par. [0007], can be effectively prevented according to this application (par. [0011], lines 4-6). However, Wachi never discloses forming smooth protrusions on the

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surfaces of the color filters for providing a uniform cell gap, and those skilled in the art could easily realize that the alignment control protrusions of Wachi's may even cause the non-uniform cell gap problem of the prior art because his alignment control protrusions have sharp surfaces and larger height differences (than curved convex structures have),

5 which performs as the holes 18 of the prior-art structure shown in Fig.2 of this application. In fact, Fig.3 of Wachi shows uneven surfaces of the data lines 24 and the alignment film 25 so that Wachi never teaches how to solve the prior-art problem of non-uniform cell gap. As a result, in contrast to Wachi's application, it is an obviously advantage of this application that the smooth curved convex structures on each color filter can provide a
10 more uniform cell gap. Accordingly, the LCDs in claims 20 and 31 of this application should be allowable in comparing with Wachi's application. Reconsideration of claims 20 and 31 is politely requested.

Regarding claims 22-23 and 33-34 of this application, claims 22 and 33 describe that
15 the surface of each color filter having the plurality of curved convex structures is able to scatter light, and claims 23 and 34 describe the distribution density of the curved convex structure is used to regulate brightness and a color deepness of the liquid crystal display, thus the color filters with curved convex structures may replace a differing layer in an LCD (par. [0011], lines 7-9). Although Examiner mentions Wachi discloses those
20 limitations of claims 22-23 and 33-34 in Fig.3 of Wachi's, Fig.3 only shows there are several protrusions with sharp or rectangular surfaces on the color filters. Furthermore, Fig.3 is silent about disclosing that the protrusions can scatter light or the distribution of the protrusions is used regulate brightness and color deepness of the LCD. Those skilled in the art could know that an element with a sharp or rectangular surface usually has bad
25 performance of scattering light. Therefore, Wachi's Fig.3 does not disclose the limitations of claims 22-23 and 33-34, thus claims 22-23 and 33-34 should be allowable. Reconsideration of claims 22-23 and 33-34 are respectfully requested.

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Claims 24 and 26-28 are dependent upon claim 20, and claims 32 and 36-38 are dependent upon claim 31, thus they should be allowable if claims 20 and 31 are allowable. Reconsideration of claims 24, 26-28, 32, and 36-38 are hereby requested.

5 **4. Rejections of claims 25, 29, 35 & 39 under 35 U.S.C. 103(a):**

Claims 25, 29, 35 & 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wachi for reasons of record, as cited on pages 5-6 of the above-identified Office Action.

10 **Response:**

Since claims 25, 29 and claims 35, 39 are dependent upon claims 20 and 31 respectively, they should be allowable if claims 20 and 31 are allowable. Reconsideration of claims 25, 29, 35, and 39 is politely requested.

15 **4. Introduction of new claims:**

Claims 40-47 are added for clearly describing the characteristics of this application. The new claims are fully supported by the specification and figures of this application, and no new matters are introduced. Claims 40 and 44 describe that the curved convex structures comprise smooth surfaces, and claims 41 and 45 describe that the curved convex structures comprise spherical surfaces (Figs.3-6). Claims 42 and 46 describes each pixel unit comprises three color filters to present a sub-pixel, and each of the color filters has a plurality of the curved convex structure on its surface (Figs. 3-6). In addition, claims 43 and 47 describe the curved convex structures have non-uniform sizes (par. [0020], lines 1-8). *Wachi never discloses that a color filter in one sub-pixel has a plurality of curved (or smooth or spherical) protrusions nor discloses his protrusions on one color filter have non-uniform size, and therefore claims 40-47 should be allowable.* Acceptance and consideration of claims 40-47 are politely requested.

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Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,

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Date: 02/26/2006

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Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 13 hours behind the Taiwan time, i.e. 9 AM in D.C. = 10 PM in Taiwan.)